

# No Pain, All Gain?

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It is not often that I get riled up enough to write in response to something I read. Most of the time I have a pretty level head and believe that everyone has a right to their opinion. However, when I received my August 17, 2009 issue of *Time* magazine, it was very difficult for me to keep silent. Pictured on the cover is an attractive female of a healthy weight running on a treadmill. Her eyes appear to be focused at a luscious cup cake (topped with sprinkles). The author's message? Exercise won't make you lose weight. Now, you may wonder, why did that bother me, a nutrition professional? In theory, this article actually supports what I do because it attempts to provide evidence that what you eat determines if you will lose weight. However, the article gave or implied some misinformation that needs to be corrected.

The actual article, *Why Exercise Won't Make You Thin*, by John Cloud can be found at <http://www.time.com/time/health/article/0,8599,1914857-1,00.html>. Mr. Cloud admits that he exercises "obsessively." Yet all the exercise has not help erase the excess fat around his middle. His reason? Mr. Cloud reports that exercise stimulates hunger and therefore makes people eat more. He states, "Exercise, in other words, isn't necessarily helping us lose weight. It may even be making it harder." He goes on to say, "...like many other people, I get hungry after I exercise, so I often eat more on the days I work out than on the days I don't." So it is true? Does exercise make us fat because it makes us eat more?

As you might expect, the answer is complicated. Exercise results in expending more energy than if we sat on the couch. Any logical person will conclude that this will aid in weight loss. The key to weight loss is to expend more energy than is consumed. If there is a negative energy balance, then weight loss will result. However, the opposite is also true. If there is a positive energy balance (we eat more than we burn), weight gain will result. The concept that Mr. Cloud introduces is that exercise promotes hunger and therefore intake and as a result, weight loss is not seen with exercise. In fact, he reports that weight gain may occur.

What Mr. Cloud has forgotten is that we are all different as is the way we respond to various stimuli. The way we respond depends on the influence of physiology as well as learned behaviors. It would be inaccurate to claim that everyone will overeat as a result of exercise. There are many factors that influence the effect of exercise on hunger. The first factor to consider is gender. Studies have shown that hunger is suppressed immediately after an intense workout. This is especially true for men and lean women but does not appear to be as evident in obese women. In addition, men's appetites are suppressed more after a moderate to high intensity workout when compared to women. However, when compared to a group who did not exercise, the exercise did not affect the total energy intake for that day nor the day after.

This is not the case for obese women. Leptin is a hormone that curbs appetite. The more fat mass there is, the more leptin that is released. The release of leptin is the body's initial reaction to the fat gain. By its release, it demonstrates the body's desire to maintain homeostasis and resist weight gain. So in theory, with the higher body fat, a higher concentration of leptin is released resulting in decreased appetite and hopefully, the prevention of weight gain. This feedback system works beautifully in lean people (and helps them to stay lean). However, as people become heavier, the body becomes more resistant to the effects of leptin. So unfortunately, in obese women, the appetite is not suppressed and therefore hunger is not suppressed after exercise.

The second factor that influences hunger is the type of exercise. Weight resistance, aerobic, low or moderate intensity all affect hunger differently. David Broom and colleagues assessed the effects of the different type of exercise on hunger. Hunger was self reported and also measured by assessing the level of hunger regulating hormones, ghrelin and peptide YY (PYY) in healthy males. Ghrelin is released from the stomach and pancreas and stimulates hunger. PYY is released from the intestine and decreases appetite. Their study shows that hunger is inhibited during and after aerobic exercise. Resistance exercise (weight lifting) does not cause a significant increase in the level of PYY, but it did increase the level of ghrelin. For resistance exercise, there was an increase in hunger shown.

The intensity of the exercise also influences hunger level. Low intensity exercise does not reduce hunger but it also did not increase the desire to eat (more). Whereas, high intensity exercise stifles hunger and this may last for as long as 48 hours. Athletes who expended lots of energy during prolonged, high intensity exercise (e.g., Tour de France cyclists) did not compensate by eating more calories to balance the energy gap at the most immediate opportunity (e.g., during the first meal after exercise). However, it is possible that these athletes were less active (burned less calories) the rest of the day (or two) to compensate.

Another factor to consider is the influence of body temperature on hunger. Individuals who exercise in the cold (e.g., swimming) demonstrate a higher hunger level than someone who has run at a moderate pace for 90 minutes or someone who exercised in a warm environment. When the core body temperature falls, there is a strong need to eat to bring the body temperature up. On the flip side, if we are hot after a workout, we will experience a drop in our appetite.

The last factor that influences intake is compensatory eating. Mr. Cloud explains this quite well in his article as when people who exercise tend to reward themselves by eating a cheeseburger or two after exercising. Some of this is the result of lack of nutrition education and/or anticipation of future energy requirement (e.g., riding in the Tour de France). The behavior adaptation (eating even though the body is not hungry) seen in Tour de France cyclists allows the athletes to consume sufficient energy (overcoming the lack of hunger) to ride again the next day. For the non-Tour individual, compensatory eating is eating the blueberry muffin (360 calories) after jogging (5 mph) for 15 minutes (burning ~180 calories for a person who is 154 pounds). This may or may not be

related to experiencing hunger after exercising. This type of eating is a pure reward for all the work.

If exercise is not part of a weight loss program, the only alternative is to cut back on caloric intake. Studies have shown that a low-calorie diet can be more of an appetite stimulant and induce a higher degree of hunger compared to exercise. Subjects on a restrictive diet overeat at their first opportunity which then creates an energy imbalance. Strictly cutting back on calories is less successful than if the individuals included a more liberal diet and incorporated exercise into their weight loss plan.

It is without a doubt that exercise provides other health benefits. Even John Cloud admitted this in his article, "...enhancing heart health and helping prevent disease, exercise improves your mental health and cognitive ability." However, the overall effect of exercise on weight loss is not as discouraging as Mr. Cloud portrayed.

### **Resources:**

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